AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (***Currently Amended***) A system for releasable engagement of two bodies, said system comprising:

a first body comprising an engagement surface, said engagement surface comprising a pseudo-elastic material, said pseudo-elastic material being at an operating temperature, said operating temperature being above the martensite-austenite transition temperature for said pseudo-elastic material, said pseudo-elastic material being capable of conversion from an austenite state to a martensite state by application of stress to said first body at said engagement surface, said application of stress to said engagement surface thereby converting said first body from an unloaded body to a loaded body, wherein the engagement surface of said unloaded body that is in said austenite state has an unstressed shape and the engagement surface of said loaded body that is in said martensite state has a stressed shape, wherein said stressed shape is different from said unstressed shape;

a second body comprising an indenter surface for contacting the engagement surface of said first body, said indenter surface being formed by one or more teeth that extend from said second body for engagement with said first body to provide said stress to change said engagement surface of pseudo-elastic material from said austenite state to said martensite state, said second body comprising a material that is harder than said pseudo-elastic material in said martensite state; and

an engagement mechanism that provides reversible contact of said indenter surface with said engagement surface and provides for the application of sufficient stress to said engagement surface to provide reversible conversion of at least a portion of said pseudo-elastic material from

said austenite state to said martensite state due to a stress-induced martensite-austenite transition while said operating temperature remains above said martensite-austenite transition temperature,

wherein a load is transferred between said first and second bodies while in operation through contact of said indenter surface of said second body with said engagement surface of said first body to cause a change of motion of at least one of said first and second bodies relative to each other.

2. ***(Original)*** A system for releasable engagement of two bodies according to claim 1 wherein said operating temperature is within 40°C above said martensite-austenite transition temperature.

3. ***(Original)*** A system for releasable engagement of two bodies according to claim 1 wherein said operating temperature is between room temperature and 300°C.

4. ***(Previously Presented)*** A system for releasable engagement of two bodies according to claim 1 wherein said engagement surface of said first body is non-planar.

5. ***(Original)*** A system for releasable engagement of two bodies according to claim 4 wherein said engagement surface surrounds said indenter body.

6. ***(Previously Presented)*** A system for releasable engagement of two bodies according to claim 4 wherein said indenter body surrounds said engagement surface.

7. ***(Original)*** A system for releasable engagement of two bodies according to claim 1 wherein said indenter body is a gear.

8. ***(Original)*** A system for releasable engagement of two bodies according to claim 7 wherein said engagement mechanism comprises a linear motor.

9. ***(Original)*** A system for releasable engagement of two bodies according to claim 1 wherein said engagement mechanism comprises a clamping apparatus for clamping said first and second bodies together.

10. ***(Currently Amended)*** A method for engaging and disengaging two bodies, said method comprising:

providing a first body comprising an engagement surface, said engagement surface comprising a pseudo-elastic material, said pseudo-elastic material being at an operating temperature, said operating temperature being above the martensite-austenite transition temperature for said pseudo-elastic material, said pseudo-elastic material being capable of conversion from an austenite state to a martensite state by application of stress to said first body at said engagement surface, said application of stress to said engagement surface thereby converting said first body from an unloaded body to a loaded body, wherein the engagement surface of said unloaded body that is in said austenite state has an unstressed shape and the engagement surface of said loaded body that is in said martensite state has a stressed shape, wherein said stressed shape is different from said unstressed shape;

providing a second body comprising an indenter surface for contacting the engagement surface of said first body, said indenter surface being formed by one or more teeth that extend from said second body for engagement with said first body to provide said stress to change said engagement surface of pseudo-elastic material from said austenite state to said martensite state, said second body comprising a material that is harder than said pseudo-elastic material in said martensite state;

providing an engagement mechanism for contacting said indenter surface with said engagement surface to apply sufficient stress to said engagement surface to convert at least a

portion of said pseudo-elastic material from said austenite state to said martensite state due to a stress-induced martensite-austenite transition while said operating temperature remains above said martensite-austenite transition temperature; and

removing said indenter surface from contact with said engagement surface to thereby provide return of said at least a portion of said pseudo-elastic material to said austenite state,

wherein a load is transferred between said first and second bodies while in operation through contact of said indenter surface of said second body with said engagement surface of said first body to cause a change of motion of at least one of said first and second bodies relative to each other.

11. ***(Previously Presented)*** A method for engaging and disengaging two bodies according to claim 10 further comprising:

moving said first and second bodies relative to each other after said removing said indenter surface from contact with said engagement surface to thereby provide repositioned first and second bodies; and

contacting said indenter surface with said engagement surface of said repositioned first and second bodies to apply sufficient stress to said engagement surface to convert the engagement surface of said repositioned bodies from said unstressed shape to said stressed shape wherein said stressed shape conforms to the shape of said indenter teeth.

12. ***(Original)*** A method for engaging and disengaging two bodies according to claim 10 wherein said operating temperature is within 40°C above said martensite-austenite transition temperature.

13. ***(Original)*** A method for engaging and disengaging two bodies according to claim 10 wherein said operating temperature is between room temperature and 300°C.

14. ***(Previously Presented)*** A method for engaging and disengaging two bodies according to claim 10 wherein said engagement surface of said first body is non-planar.

15. ***(Original)*** A method for engaging and disengaging two bodies according to claim 14 wherein said engagement surface surrounds said indenter body.

16. ***(Original)*** A method for engaging and disengaging two bodies according to claim 14 wherein said indenter body surrounds said engagement surface.

17. ***(Original)*** A method for engaging and disengaging two bodies according to claim 10 wherein said indenter body is a gear.

18. ***(Original)*** A method for engaging and disengaging two bodies according to claim 17 wherein said engagement mechanism comprises a linear motor.

19. ***(Previously Presented)*** A method for engaging and disengaging two bodies according to claim 10 wherein said engagement mechanism comprises a clamping apparatus for clamping said first and second bodies together.